# USER'S MANUAL

## IDTECK RF245

## 2.45GHz Long Range Reader

**V1.2.1**

# Table of Contents

1. Important Safety Instructions ..... 3

2. General ..... 3

3. Features ..... 4

4. Specification ..... 4

5. Identifying Supplied Parts ..... 4

6. Installation of the Product ..... 5

7. Color Coded & Wiring Table ..... 7

8. Output Format and Timing ..... 7

9. Wire Connection to Controller ..... 8

10. Operation ..... 8

11. FCC Registration Information ..... 9

12. Warranty and Service ..... 10

13. Frequently Asked Question ..... 11

# 1. Important Safety Instructions

**When using RF245, basic safety precautions should always be followed to reduce the risk of fire, electrical shock, and injury to persons. In addition, the following safety guides should also be followed:**

1. **Fully read and understand all instructions and follow them completely.**
2. **Follow all warnings and instructions marked on the product.**
3. **Do not use liquid or aerosol cleaners. Use a damp cloth for cleaning. If necessary, use mild soap.**
4. **Do not use this product near water.**
5. **Only operate this product using the type of power source indicated. If you are not sure of the type of power supplied to your installation site, consult your dealer of local power company.**
6. **Never insert objects of any kind into the product or through the cabinet slots as they may touch voltage points and/or short circuit parts possibly resulting in fire or electric shock. Never spill liquid of any kind on the product.**
7. **Never disassemble this product by yourself; take the unit to a qualified service center whenever service or repair is required. Opening or removing the covers may expose you to dangerous voltages or other risks. Also, incorrect reassembly can cause electric shock when the unit is subsequently used.**
8. **Unplug this product from the Direct Current (DC) power source and refer to qualified service personnel under these conditions:**

    a. **When the power supply cord or plug is damaged or frayed.**
    b. **If liquid has been spilled on the product.**
    c. **If the product does not operate normally after following the operating instructions in this manual. Adjust only those controls that are covered by the operating instructions in this manual. Improper adjustment of other controls that are not covered by this manual may damage the unit and will often require extensive work by a qualified technician to restore normal operation.**
    d. **If the product exhibits a distinct change in performance.**

# 2. General

**The RF245 is a 2.45GHz Long Range Reader for outdoor use and the maximum read range is 32feet (10 meter, RF245-10M), 16feet (5 meter, RF245-5M) and 10feet (3 meter, RF245-3M) with IDA245 active tag. The RF245 can be used for various applications such as Hands Free Access Control, Parking Control, Personal Tracking and Factory Automation. The RF245 supports various output formats, 26bit Wiegand output, RS232 serial output and BARGATE output. There are optional Mounting Bracket and Reader Hood for easy installation. The RF245 has automatic setup for Channel setting, Site Code setting when it powered up. Red color LED and built-in Beeper assures its accurate and reliable system operation.**

## 3. Features

- Long Range Reader (RF245-10M/-5M/-3M with IDA245)
- 2.402GHz Frequency
- Encrypted Tag ID and Secure Protocols between Reader and Tags
- Multiple Tags Reading (30 Tags / Sec.)
- 90° One Directional Antenna
- 26bit Wiegand and RS232 Output Format
- Direct Bargate Output (Open Collector: 100mA/1s)
- OTR and Hold Control Input for Parking Control

## 4. Specification

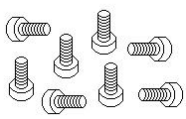
| Model | RF245 |
|---|---|
| CPU | 8bit Microprocessor and ISM Band Receiver |
| Read Range | RF245-10M/-5M/-3M, 10meter, 5 meter, 3 meter |
| Multiple Reading | 30 Tags / second |
| Frequency | 2.402GHz |
| Receiving Site Code | 256 Site Code |
| Modulation | Encrypted GFSK |
| Directivity | 90deg. One Directional Antenna |
| Receiver Gain | Better than -80dBm |
| Output Format | 26bit Wiegand and RS232 |
| RS232 Format | 9600bps, Parity None, 8 Data bits, 1 Stop bit |
| Bargate Output | Max. 100mA (Open Collector Output: 1s) |
| OTR Control Input | One Time Reading Control Input |
| HOLD Control Input | Hold Control Input (NC contacts) |
| LED / Beeper | Red Color LED / Piezo Buzzer |
| Power / Current | DC12V / Max. 50mA |
| Operating Temperature | -35° to +65°C (-31(F to +149(F) |
| Operating Humidity | 10% to 90% relative humidity, non-condensing |
| Color / Material | Ivory / Polycarbonate / Aluminum (Anodized) |
| Weight / Dimension | 1.36Kg / 200mm x 200mm x 45mm (W x H x D) |

## 5. Identifying Supplied Parts

Please unpack and check the contents of the box:

RF245

User's Manual

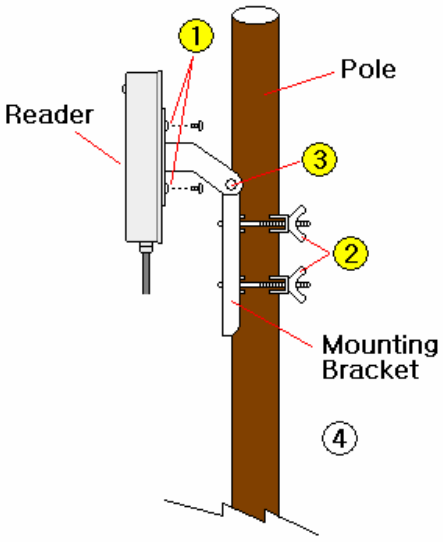


Mounting Bolts (8 pcs)

# 6. Installation of the Product

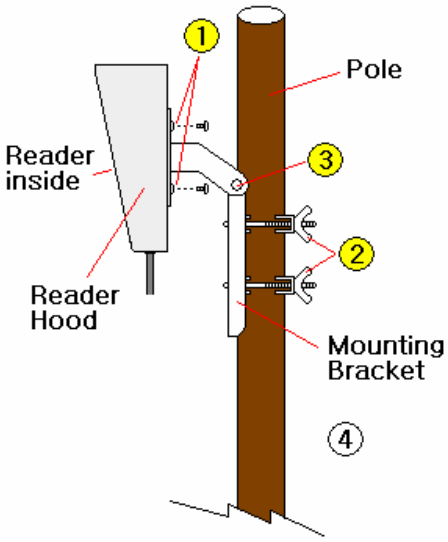
Installation with Mounting Bracket

1. Tighten 8 x mounting bolts to the reader
2. Insert Mounting Bracket to the pole and tighten the V-bolts
3. Setting the reading angle and tighten bolts/nuts

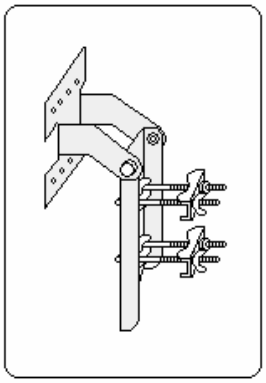



Installation with Mounting Bracket and Reader Hood

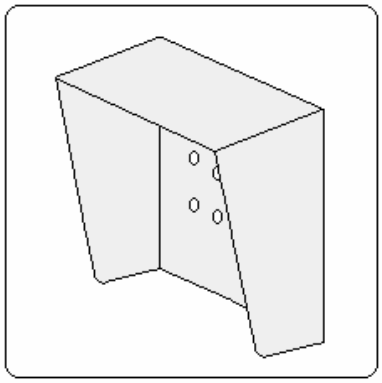
1. Insert Reader Hood in between the reader and the Mounting Bracket and tighten 8 x mounting bolts to the reader
2. Insert Mounting Bracket to the pole and tighten the V-bolts
3. Setting the reading angle and tighten bolts/nuts




Optional Purchase Items



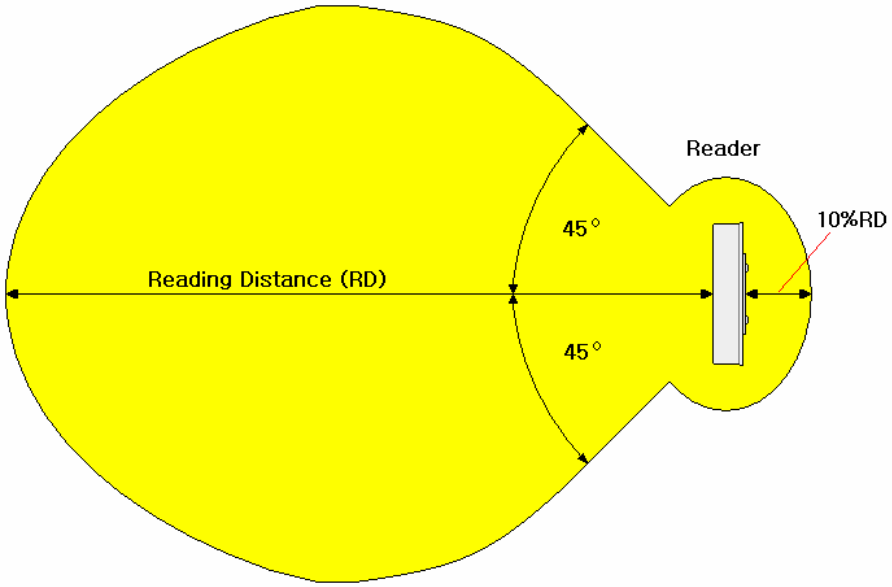
Mounting Bracket



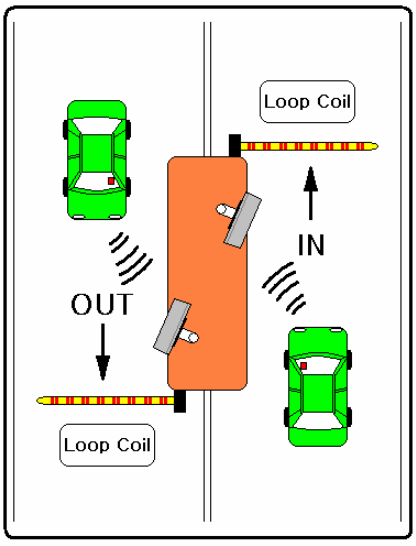
Reader Hood

## Reading Angle of RF245

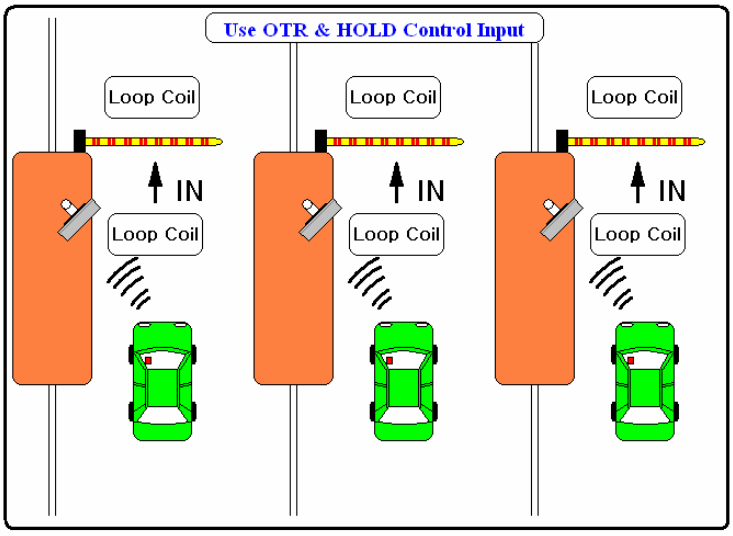
**The reading angle of RF245 is approximately 90 degree at the front side of the reader. However the reader has about 10% of the maximum reading distance at the rear side of the reader.**




## Applications




Parking Control (Island)




Multiple Gates with OTR & HOLD Control

## 7. Color Coded & Wiring Table

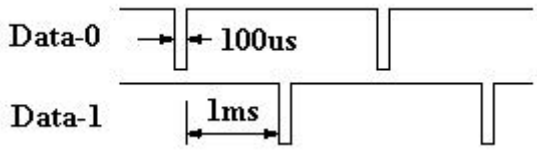
| | | |
|---|---|---|
| **Power** | | |
| Power (DC +12V) | DC(+) | Red wire |
| Power (DC Ground) | GND | Black wire |
| **26bit Wiegand Output** | | |
| Wiegand Data-0 | Data-0 | Green wire |
| Wiegand Data-1 | Data-1 | White wire |
| **RS232 Output** | | |
| RS232 Output | RS232 | Violet wire |
| **BARGATE Output** | | |
| BARGATE Output[1)] | BARGATE | Gray wire |
| **Control Input** | | |
| HOLD[2)] Control Input | HOLD | Blue wire |
| OTR[3)] Control Input | OTR | Yellow wire |

[1)] BARGATE Output is an open collector output. (TR output)
Max. 100mA current drain, 1 second low active pulse.
[2)] HOLD Input is low active input, NC contacts required. Put GND for HOLD.
[3)] OTR is One Time Reading.

## 8. Output Format and Timing

### 8-1. 26bit Wiegand Output Timing

Data bit: 100us low active pulse
Interval between bits: 1ms




### 8-2. RS232 Output Format

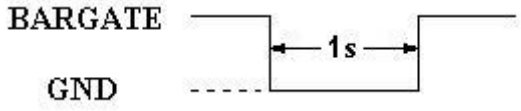
Baud Rate: 9600bps, Parity: None, Data bit: 8, Stop bit: 1
LRC: Exclusive OR (XOR) from Start(0x02h) to End(0x03h)

| Start(0x02h) | Card ID (8 ASCII char.) | End(0x03h) | LRC(XOR) |
|---|---|---|---|

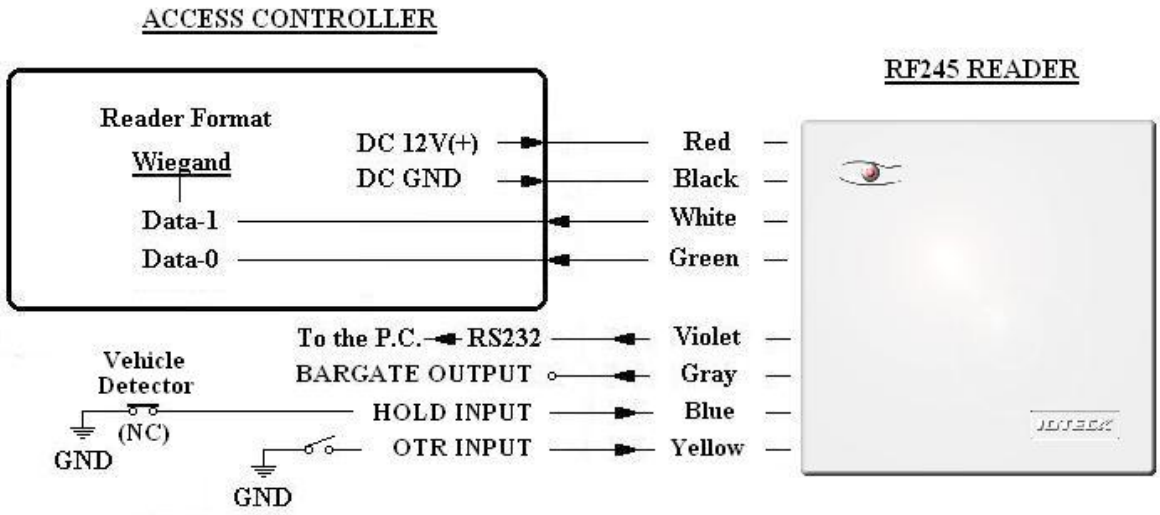
Total 11 bytes

### 8-3. BARGATE Output Timing

Low active pulse: 1s duration



## 9. Wire Connection to Controller




Wire Connection to Controller

## 10. Operation

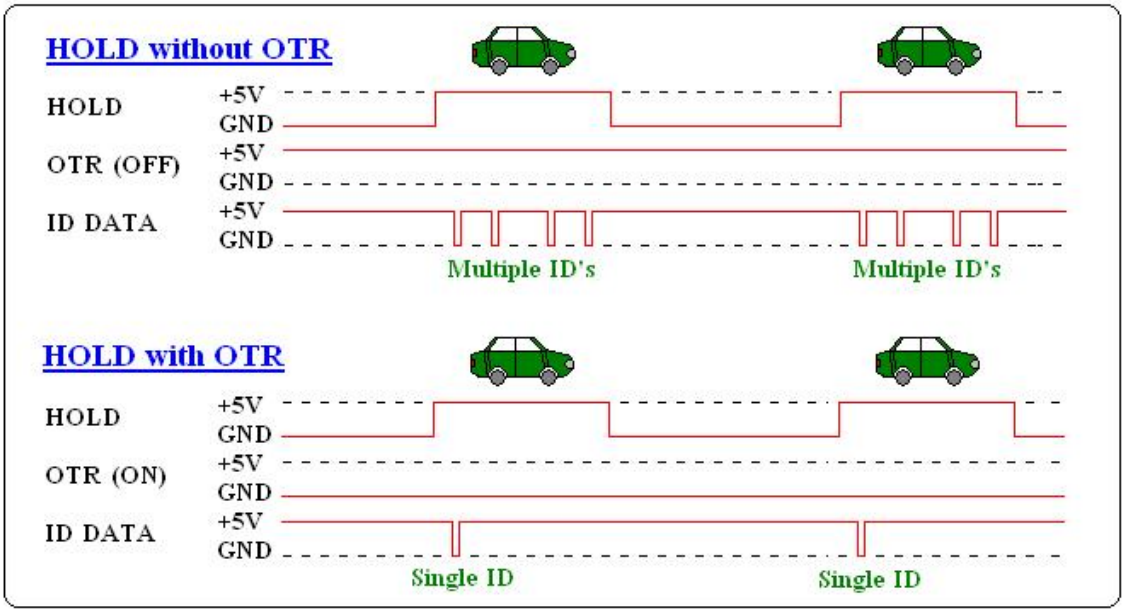
**10-1.** Apply the power to the reader. The RF245 reader will setup receiving frequency and Site Code automatically. Then the Reader will get into standby mode after a successful initialization and diagnostics.

**10-2.** When a tag is approaching to the reader, then the reader will make a beep sound and turn red LED on simultaneously. The reader will send the 26bit Wiegand output, RS232 output and BARGATE output to the controller on the same time.

**10-3.** BARGATE Output:
When the reader detects the tag, the reader also generates 1s BARGATE control output through the Gray wire. The BARGATE output is a Transistor (open collector) output, maximum current drain 100mA.

**10-4.** One Time Reading (OTR) Control Input:
When you setup the reader to One Time Reading Mode (Put OTR Control Input, Yellow wire to GND), the reader only generates output when the tag is detected first time. The output for same tag is only generated when the tag is away from the read range of the reader for 5 seconds and approach to the reader again.

**10-5.** HOLD Control Input: (NC contacts required)
When the HOLD Control Input (Blue wire) puts to GND, the Reader will not read the tag. The Reader will read the tag while this wire opens. Use this input to vehicle detector such as Loop Coil Sensor. When you use Hold Input with OTR function (Put Yellow wire to GND), only one tag ID will be detected during the HOLD Input is open circuit. Please refer to the following figure for HOLD & OTR function.




## 11. FCC Registration Information

**FCC REQUIREMENTS PART 15**

**Caution: Any changes or modifications in construction of this device, which are not expressly approved by the manufacturer for compliance, could void the user's authority to operate the equipment.**

**NOTE: This device complies with Part 15 of the FCC Rules.**

**Operation is subject to the following two conditions;**
1. **This device may not cause harmful interference, and**
2. **This device must accept any interference received, including interference that may cause undesired operation.**

**This equipment has been tested and found to comply with the limits for a Class A Digital Device, pursuant to Part 15 of the FCC Rules. These limits are designed to this equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications.**
**However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the radio or television off and on, the user is encouraged to try to correct interference by one or more of the following measures.**

**1. Reorient or relocate the receiving antenna.**
**2. Increase the separation between the equipment and receiver.**
**3. Connect the equipment into an outlet on another circuit.**
**4. Consult the dealer or an experienced radio/TV technician for help.**

# 12. Warranty and Service

**The warranty period of the product is for 2 years from the shipping date.**

**If any technical support or RMA process is required, please contact IDTECK Service Center.**

**IDTECK Service Center**

**5F. Ace Techno Tower Building.**
**684-1, Deungchon-Dong, Gangseo-Gu,**
**SEOUL 157-030, KOREA**
**Tel.: +82 2 2659 0055**
**Fax: +82 2 2659 0086**
**E-mail: webmaster@idteck.com**
**Website: www.idteck.com**

**Technical Support**

**E-mail: techsupport@idteck.com**
**Hotline: +82 17 340 4170 (Vice President)**
**+82 10 9617 1761 (Software Support)**
**+82 10 3168 1134 (Hardware Support)**

**RMA Procedure:**

1. Connect IDTECK website. www.idteck.com
2. Login with your ID and Password.
   (Registration is required if you visit our website at the first time.)
3. Select RMA Request and fill up the form.
4. Get RMA number and ship back the product to IDTECK address.

**Ship Back Procedure:**

Please use the original box, or pack the unit(s) in a sturdy carton with sufficient packing to prevent damage, include the following information:

1. RMA number.
2. Bill-to address.
3. Ship-to address. (Returning address after troubleshooting)
4. Number and description of units shipped.
5. Name and telephone number of person to contact.
6. Reason for return and description of the problem.

※ NOTE: Damage occurring during shipment is deemed the responsibility of the carrier, and claims should be made directly to the carrier.

## 13. Frequently Asked Question

**Q: Why the RF245 Reader can not read some tags ?**

**A: The RF245 Reader has a Site Code programmed when it powered up and the Reader only reads the tag has same Site Code. It is to prevent reading the tags from other site. To change the Site Code of the Reader, power off for 5 seconds and power on again then read a tag. The Reader will re-program the Site Code from the first reading tag.**

**Q: The tag is attached on the windshield of the car, Why the tag in some car have short read range ?**

**A: The windshield of some car is coated by conductive materials for electrostatic discharge and the microwave (RF) from the tag is reflected on this conductive layer therefore the read range of the tag is reduced.**

**Q: Why the tag does not read through the human body ?**

**A: RF245 Reader and IDA245 tag is using 2.402GHz ISM band, very high directivity and only communicates at the line of sight distance. The microwave can not pass through the human body.**

**Q: Is the Reader weatherproof ? Can we install the Reader outdoor ?**

**A: The RF245 Reader is designed for outdoor use and all electronics are epoxy potted. The Reader is weatherproof.**

**Q: We want to get a ID output when the car is detected on the loop coil sensor. How can we use Hold Input and OTR Input ?**

**A: The RF245 Reader has Hold Input and OTR Input. If you want to detect a tag only the car is detected on the loop coil sensor, Connect NC contact of loop coil to Blue wire (HOLD INPUT) and COM contact of loop coil to GND so that the Reader only reads a tag when the car is detected on the loop coil sensor. If OTR Input also puts to GND (OTR enabled), then the Reader generates only one ID output during the Hold signal OFF, open circuit.**

**The contents of this manual is subject to change without notice at any time.**

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